

ABSTRACT

An ionization spectrometer is disclosed that ionizes substantially all molecules passing therethrough having an ionization potential less than or equal to the strength of the ionization field. A cathode detection unit may be utilized to detect the number of ionized molecules and / or an anode detection unit may be used to detect the number of electrons stripped from the ionized molecules. The cathode detection unit may be a mass spectrometer that differentiates ions based on mass-charge or it may be an ion mobility spectrometer that differentiates ions based on mobility. In other embodiments, a valence spectrometer is disclosed that can selectively detect ionized molecules having different valency levels. In other embodiments, a valence spectrometer is disclosed that can selectively detect ionized molecules having different valency levels. Methods of manufacture as well as methods of use are also disclosed.